REMARKS

Claims 1-58 were pending and presented for examination and in this application. In an Office Action dated February 15, 2008, claims 1-58 were rejected. Applicants are amending claims 1, 18, 35 and 52 in this Amendment and Response.

Response to Rejection Under 35 USC §103(a)

In the 1st paragraph of the Office Action, Examiner rejects claims 1-58 under 35 USC §103(a) as allegedly being unpatentable in view of Koda (US Patent 6,408,030) in view of Sethuraman (US Patent 6,563,549). This rejection is respectfully traversed.

As amended, claim 1 recites:

A computer implemented method of encoding video images, where each image has a frame type, comprising:
  receiving a plurality of macroblocks for an uncompressed image;
  determining a macroblock type for each macroblock;
  determining whether the image represents a scene change based upon a distribution of macroblock types of the macroblocks; and
  encoding the image without changing the frame type of the image in response to the determination of a scene change and the frame type of the image.

Claims 18, 35 and 52 recite similar language. The claimed invention relates to scene change determination for an image, and to encoding the image based on the scene change determination and the frame type of the image. More specifically, the claimed encoding method determines whether an image to be encoded represents a scene change based upon a distribution of macroblock types of the image, and encodes the image **without changing the frame type of**

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the image in response to the determination of a scene change and the frame type of the image. The claimed invention beneficially allows an encoding system to perform scene change detection of an image during underlined encoding process, without first decoding the compressed image prior in order to identify the scene change. The claimed invention further beneficially allows the encoding system to encode the image without changing the frame type of the image.

Koda does not disclose the claimed invention. Koda discloses a method for detecting a scene change point in a moving picture that requires first underlined decoding an image **which has already been coded** according to a moving picture coding process. *See* Koda at Abstract. To detect a scene change point in a moving picture, Koda first encodes a picture of the moving picture either as an "I", "P" or "B" picture and generates compressed picture data including user data. *See* Koda at col. 5:27-36 and col. 5: 52-63. Koda then decodes the user data, such as number of skipped blocks and a predetermined threshold value d(P), is decoded by the decoder 18. Koda's decoder 18 uses the underlined decoded user data to detect a scene change point. *See* Koda at col. 8:32:62 and FIG. 8. As such, Koda has to engage the computationally expensive decoding of the compressed picture prior to the scene change analysis. In contrast, the claimed scene change is detected during encoding process itself, without any need for a subsequent decoding and analysis of the decoded data. Therefore, Koda does not disclose the claimed invention.

Further, Koda does not disclose determining whether an image represents a scene change based on a distribution of macroblock types of the image. Nowhere does Koda base his scene change on the distribution of macroblock types. Instead, Koda merely looks at the comparison between a block count and a predetermined threshold value during decoding process. Koda's block count is a sum of the number of blocks completing intra-picture compression, the number

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of blocks completing differential-picture compression and the number of skipped blocks. *See* Koda at col. 8:39:61. As such, Koda does not disclose the claimed invention.

Sethuraman does not remedy the deficiency of Koda. In the rejection of claims 1-58, the Examiner acknowledges that Koda is silent in regard to encoding the image in response to determine a scene change and the frame type, and asserts that this feature is disclosed in Seth. However, Sethuraman does not teach or suggest encoding the image **without changing the frame type of the image** in response to the determination of a scene change and the frame type of the image, as claimed.

Sethuraman discloses a method for adapting the behavior of an MPEG-like encoder to information discontinuities, e.g., a scene change, within a received information stream. However, Sethuraman does not disclose encoding an image without changing the frame type of the image in response to the detection of information discontinuities. Rather, Sethuraman specifically teaches changing the frame type. Specifically, in Sethuraman, in response to the detection of an information discontinuity, an I-frame preceding an information discontinuity is encoded as a P-frame, while an anchor frame following the information discontinuities is encoded as an I-frame. *See* Sethuraman at Abstract and col.9:34-53. Alternatively, Sethuraman encodes an I-frame preceding an information discontinuity as a P-frame, while an anchor frame following the information discontinuities is encoded as a B-frame and the frame where the scene change is detected, e.g., frame 12 in Table I, is encoded as an I-frame rather than its original frame type, B-frame. As such, Sethuraman does not disclose the claimed invention.

The combination of Koda's scene detection during decoding process and Sethuraman's GOP encoding structure adaptation would merely teach changing the frame type (I frames to P

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frames, etc.) based on information discontinuities (per Sethuraman) during Koda's decoding analysis. Accordingly, this combination does not teach or disclose the features that encode an image _without_ changing the frame type of the image in response to the determination of a scene change and the frame type of the image, as claimed. Indeed, the combination is cannot suggest the claimed invention, since it would change Koda's principle of operation: Sethuraman changes the GOP encoding structure in response to scene detection during _encoding_ process, as such would entirely eliminate the need to use Koda's scene detection performed during _decoding_ process. See, MPEP 2143.01, Section VI ("If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious.")

For at least the reasons above, Applicants submit that claims 1, 18, 35 and 52 are patentable over the cited references. Claims 2-17, 19-34, 36-51 and 53-58 either directly or indirectly depend from claims 1, 18, 35 and 52. These dependent claims also recite additional features not disclosed by the cited references. Thus, Applicants submit claims 2-17, 19-34, 36-51 and 53-58 are patentably distinguishable over the cited references.

Conclusion

In sum, Applicants respectfully submit that pending claims are patentably distinguishable over the cited references. Therefore, Applicants request reconsideration of the basis for the rejections to these claims and request allowance of them.

If the Examiner is in need to further information, he is invited to contact the undersigned attorney at the telephone number provided below.

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Respectfully submitted,
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